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Client/Matter: U.S. Appl. No. 08/900,254
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Examiner Samchuan Yao	**U.S. Patent Office Art Unit 1733**	**571-273-1224 and 703-872-9306**	

Comments:

Per the request of Examiner Samchuan Yao, enclosed is a faxed copy of the Appeal Brief with the notations we discussed.

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Thomas C. Hughes
Reg. No. 42,674

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Docket No. 22750/350

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Peter PFEUFFER
Serial No.:	08/900,254
Filing Date:	July 25, 1997
For:	FILTER MATERIAL, METHOD OF ITS MANUFACTURE, AND APPARATUS FOR MANUFACTURING A FILTER MATERIAL
Art Unit:	1733
Examiner:	Yao, S.
Confirmation No.:	7919

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APPEAL BRIEF PURSUANT TO 37 C.F.R. § 1.192(a)

SIR:

In the above-identified patent application ("the present application"), on July 9, 2004, Appellant filed a Notice of Appeal and Request for Extension of Time Pursuant to 37 C.F.R. §1.17(a)(1) from the final rejection of claim 1 contained in the Final Office Action issued by the United States Patent and Trademark Office ("the PTO") on March 9, 2004. Since the Notice of Appeal was filed on July 9, 2004, the period for filing this Appeal Brief expires on September 9, 2004.

In accordance with 37 C.F.R. § 1.192(a), this brief is submitted in triplicate in support of the appeal of the final rejection of claim 1. For at least the reasons set forth below, it is respectfully submitted that the final rejections of claim 1 should be reversed.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Firma Carl Freudenberg ("Freudenberg") of Weinheim in Germany. Freudenberg is the assignee of the entire right, title and interest in the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no interferences or other appeals related to the present application "which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal."

3. STATUS OF CLAIMS

Claim 1 is pending in the present.

Claim 1 was finally rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 4,496,583 ("Yamamoto") in view of U.S. Patent No. 4,876,007 ("Narou") and U.S. Patent No. 2,862,542 ("Norton"), and further in view of U.S. Patent No. 4,772,443 ("Thornton et al."), U.S. Patent No. 5,492,580 ("Frank") and German Patent No. 4,024,053 A1 ("DE '053") and U.S. Patent No. 3,616,167 ("Gosden").

Appellants appeal from the final rejection of claim 1.

A copy of the appealed claim is attached hereto as Appendix A.

4. STATUS OF AMENDMENTS

A Final Office Action was issued in this application on March 9, 2004. The Final Office Action made final the rejection to claim 1.

In response to the Final Office Action dated March 9, 2004, a Reply Under 37 C.F.R. § 1.116 was filed in the USPTO on May 10, 2004. An Advisory Action was mailed on May 24, 2004. The Advisory Action indicated that, for the purposes of appeal, the amendments to claim 1 of Appellant's Reply Under 37 C.F.R. §1.116 would be entered.

On July 9, 2004, a Notice of Appeal was filed.

5. SUMMARY OF THE INVENTION

The present invention relates, inter alia, to a method for manufacturing a pleated filter material from a thermally bonded non-woven fabric. Page 1, lines 1 to 3. The Specification states that "a fibrous web is first formed from drawn and undrawn (i.e., stretched and unstretched) synthetic fibers and subsequently calendered." Specification at page 2, lines 15 to 18. The Specification also states that "[t]o avoid essentially flat bonding, the fibrous web is bonded in a tension-free manner between profiled calender rolls without inhomogeneities over the cross-section of the non-woven fabric." Specification at page 2, lines 18 to 21. The Specification also states that "[t]he undrawn fibers, with their low melting point, serve as thermoplastic fibers." Specification at page , lines . The Specification further states that "a non-woven fabric is formed which has a high inherent stiffness necessary for pleating, and which, because of its already existing three-dimensional structure, has spacers for the folds produced later." Specification at page 2, lines 23 to 27. The Specification states that "[t]hese spacers remain stable even under the influence of mechanical and thermal stresses during the filtration operation." Specification at page 2, lines 27 to 29.

The Specification also states that "it is advantageous that the finished filter medium, after the spacers have been impressed in the only calendering process, does not have to be heated again." Specification at page 2, lines 31 to 34. The Specification also states that "[r]etractive forces within the filter material which can lead to an unwanted deformation of the spacers are prevented following the manufacture and during the entire service life of the filter insert." Specification at page 2, line 37 to page 3, line 1.

The Specification also states that "[t]he fibrous web of the present invention is directly calendered with a three-dimensional structure, without a detour using a flat calendering process, and during calendering is bonded." Specification at page 3, lines 3 to 6. The Specification also states that "[t]he calender rolls can be operated either cold, in the case of a preheated fibrous web, or hot with temperatures up to the melting point of the undrawn fibers, in the case of a fibrous web which is preheated or not preheated." Specification at page 3, line 37 to page 4, line 3.

6. ISSUES

A. Whether claim 1 is patentable over Yamamoto in view of Narou and Norton, and further in view of Thornton et al., Frank, DE '053 and Gosden.

7. GROUPING OF CLAIMS

For purposes of this appeal, the claim stands or falls alone.

8. ARGUMENTS

A. The Rejection of Claim 1 Under 35 U.S.C. § 103(a) as Obvious Over Yamamoto in View of Narou and Norton, and Further in View of Thornton et al., Frank, DE '053 and Gosden Should Be Reversed

Claim 1 stands finally rejected under 35 U.S.C. § 103(a) as unpatentable over Yamamoto in view of Narou and Norton, and further in view of Thornton et al., Frank, DE '053 and Gosden. It is respectfully submitted that the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden does not render obvious claim 1 for the following reasons.

Claim 1 relates to a method for manufacturing a pleated filter material from a thermally bonded non-woven fabric. Claim 1 recites that the method includes the step of forming a single fibrous web from undrawn and drawn synthetic fibers. In addition, claim 1 recites that the method includes the step of preheating the fibrous web. Claim 1 also recites that the method includes the step of calendering the single fibrous web between non-heated profiled calender rolls in a single calendering step without subsequent re-heating. Furthermore, claim 1 recites that, during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between non-heated profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding. In addition, claim 1 recites that, during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.

The Final Office Action states that the claims are rejected "for the reasons of record set forth in Examiner's Answer in Paper No. 24 ... and for reasons of record set forth on 9-17-03 numbered paragraph 2." Final Office Action at page

3. The "reasons of record set forth in Examiner's Answer in Paper No. 24" state that:

> "Yamamoto et al discloses a method of forming a paper-like polyester sheet having an enhanced filtering property and excellent material strength, the method comprises blending undrawn polyester fibers with drawn polyester fibers; and forming the paper-like sheet from the blend (col. 2 line 64 to col. 3 line 21; col. 9 line 59 to col. 11 line 47). In addition, Yamamoto et al also discloses that the undrawn fibers can be fuse-bonded at a low temperature and teaches pressing the sheet using a heated calender rolls (col. 3 lines 11-21; col. 5 lines 1-4; and col. 8 paragraph 5).
>
> Yamamoto et al is silent on forming "spacers" (i.e. pleats) on the paper-like sheet. In other words, Yamamoto is silent on making a pleated filter paper sheet. In addition, Yamamoto et al does not also each calendering the paper-like sheet using profiled calender tolls to form the pleated filter sheet. However, it would have been obvious in the art of making a filter media to form spacers on the paper-like sheet of Yamamoto (i.e. to form a pleated filter paper sheet because it is notoriously well known in the filter art to form a pleated filter sheet; and because Meyer discloses that *"It is already known that pleated filter papers and... are also used mainly as air filters in the most varied forms. The advantage of large filter surfaces within the smallest of spaces, as well as low flow speeds as a result of the large filter surfaces are obvious"* (col. 1 lines 35-40) or Narou et al discloses that *"The Pleat-type filter cartridge has an advantage in that the area of the filtration membrane within a unit volume (effective filtration area) can be increased to thereby attain an enormous filtration flow rate per unit time. Therefore, the pleat-type filter cartridge is useful for large-scale filtration in the field..."* (Col. 1 lines 23-39). Furthermore, it would have been obvious in the art to calender the paper-like sheet using profiled calender tolls to form a pleated filter sheet in the process of Yamamoto et al because: a) Yamamoto et al discloses that the paper-like sheet can be impregnated with a resinous material, calendered, etc. (col. 5 lines 1-4); b) Norton discloses forming a corrugated (pleated) paper filter by calendering a fibrous sheet using a pair of profiled calender rolls (figures 1-2); and c) it is well within the purview of choice in the art to choose from known methods based on their suitability for their intended purpose or use, non but the expected result of effectively forming a pleated filter would have been achieved.
>
> As for the limitation that there is no *"inhomogeneities over the cross section of the non-*

woven fabric", Yamamoto et al discloses uniformly dispersing the blend of fibers and accordingly, the resultant sheet exhibit satisfactory properties such as: volume fraction, coefficient of air flow resistance, tensile strength, etc, (col. 6 lines 43-49; col. 10 lines 62-68). These teachings would logically suggest to one in the art that there is no inhomogeneities over the cross-section of the non-woven fabric. As for the limitation that the fibers art *"bonded in a tension-free manner between profiled calender rolls"*, since neither Yamamoto et al nor Norton expressly teaches exerting any tension to the fibrous sheet during the calendering/bonding operation (see, for instance the process taught by Norton in figures 1-2; the fibrous; the fibrous web is not being pulled or stretched during the calendering operation or after the web has passed through the calender rolls); and, as noted earlier, Yamamoto et al teaches the fibers are *"fuse-bonded"* together and also teaches heat-calendering the paper-sheet (thus would have suggested to one in the art that, fiber-bonding at least occurs during the calendering step); this limitation would naturally flow from the teachings of Yamamoto et al. As for the limitation of avoiding *"flat bonding"*, such would also directly flow from the process of taught by Yamamoto et al, because (as noted above) the process taught by Yamamoto et al (using profiled rolls) bonds the fibrous web in a tension-free manner between profiled calender tolls without inhomogeneities over the cross-section of the non-woven fabric; and because according to Applicant's disclosure on page 2 paragraph 2: *"To avoid essentially flat bonding, the fibrous web is bonded in a tension-free manner between profiled calender rolls without inhomogeneities over the cross-section of the non-woven fabric."* In any event, such would have been obvious in the art because Norton also teaches non adversely affecting the porosity or filtering capacity of the paper (col. 1 lines 27-31). This teaching would have suggested to one in the art to avoid any pressed areas or flat spots (i.e. *"flat bonding"*) so that porosity or filtering capacity of the paper is not adversely affected.

In summary, though not explicitly disclosed by the above references, since the method recited in this claim is indistinguishable to the method taught by the art of record (i.e. appears to be identical), it is reasonably expected that the fibrous sheet, of Yamamoto et al using a pair of profiled calender rolls, is bonded in a tension-free manner, without inhomogeneities over the cross-section of the cross-section of the fibrous web and without the use of flat bonding.

The "reasons of record set forth on 9-17-03 numbered paragraph 2" state that:

> "As for the added limitation ("*without subsequent re-heating*"), the process taught by Yamamoto et al particularly the one illustrated examples 13-14 does not require any reheating after web sheets were calendered. Therefore, this added limitation fails to define over the art of record."

In addition, the Advisory Action dated May 24, 2004, admits that "Yamamoto et al does not teach calendering a preheated fibrous web non-heated calender profiled rolls." Advisory Action at page 2. However, the Advisory Action states that "it would have been obvious in the art to modify the process of Yamamoto et al by preheating a fiber web comprising undrawn (i.e. binder) fibers and drawn (i.e. matrix/structural) fibers, and then calendering the pre-heated web using unheated rollers as such is notoriously well known in diverse fields art as evidence from:

> Thornton et al, drawn to making a thermally formed filter, discloses a prior art process where a fiber web is heated to a melting temperature if binder fibers and then compacted to a desired thickness using a pair of unheated rollers (col. 1 lines 45-57);
> DE '053, drawn to making absorbent pads, discloses heating a fiber web comprising binder fibers using hot air, and then consolidating the heated web using a pair of sold rollers (abstract);
> Frank, drawn to a nonwoven moldable composite, discloses a preferred method of consolidating a web, the method comprises through-air heating the web comprising binder fibers to melt the binder fibers, and then using a pair of pinch rollers to densify and cool the heated web; and further teaches that alternative methods such as not-calendering of heat-densifying a web (col. 5 lines 6-43); and,
> Gosden, drawn to making a staple fabric, discloses subjecting a web comprising bicomponent fibers to an over to melt the binder component on each fiber, then passing the heated web to a pair of cold calender rolls (example 5).

As noted in the prior office action, one in the art would have chosen from among limited effective known methods of thermally activating undrawn (i.e. binder) fibers in a fiber web and compressing the web with rolls. A preference on whether to subject

a fiber web comprising undrawn (i.e. binder) fibers directly to heated calender rolls or to pre-heat the web first and then subject it to unheated calender rolls is well within the purview of choice in the art. None, but only the expected result (of thermally activating undrawn (binder) fibers in a web and consolidating the web to a desired structure) would have been achieved." Advisory Action at pages 2 to 3. The Advisory Action also states that "absent any showing of unexpected benefit, a preference on whether to a) activate the undrawn (i.e. binder) fibers in a fiber web by pre-heating the web and then configuring the web using heated/unheated/cold profiled rolls, or b) simultaneously, activate the undrawn (i.e. binder) fibers in a fiber web and configure the web using heated profiled rolls is taken to be well within the purview of choice in the art [because] there is none, but only the expected result, of heat-activating undrawn (i.e. binder) fibers in a fiber web and shape-bonding the web, would have been achieved in performing process choice "a" or "b"." Advisory Action at page 3.

Applicant respectfully submits that the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden does not render obvious claim 1 for at least the reason that the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden fails to teach or suggest, either separately or in combination, all of the limitations recited in claim 1. For example, the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden fails to teach or suggest, either separately or in combination, a method for manufacturing a pleated filter material that includes the step of calendering the single fibrous web between non-heated profiled calender rolls in a single calendering step without subsequent re-heating, as recited in amended claim 1. According to the present invention, the Specification states at page 3, line 37 to page 4, line 1 that "the calender rolls can be operated ... cold, in the case of a preheated fibrous web." Emphasis added. The Specification also states at page 2, lines 31 to 34 that "it is advantageous that the finished filter medium, after the spacers have been impressed in the only calendering process, does not have to be heated again." Emphasis added. The Specification further states at page 2, line 34 to page 5, line1, that "[r]etractive forces within the filter material which can lead to an unwanted deformation of the spacers are prevented following the manufacture and during the entire service life of the filter insert."

In contrast, for instance, Yamamoto describes one type of process in Examples 17 to 23, in which "a paper-like sheet was formed at a speed of 12 m/min, dried at a temperature of 120°C and, then, wound up." Column 10, lines 28 to 30 (emphasis added). Thus, in Examples 17 to 23, Yamamoto describes that, in the absence of a calendering process -- the Examiner acknowledges that Examples 17 to 23 do not provide a calendering step -- heat is applied in order to dry the fiber sheet. In addition, Yamamoto also describes another type of process in Examples 13 and 14, which the Examiner relies upon to demonstrate that a subsequent reheating step, e.g., a drying step, is not required in Yamamoto when a calender process is performed. However, Yamamoto states that "[t]he sheets produced in Examples 13 and 14 were pressed by using a calender roll ... at a temperature of 180°C in Example 13 and 130°C in Example 14." Column 8, lines 37 to 40, emphasis added. Thus, to the extent that Yamamoto describes that a subsequent re-heating step may be avoided, Yamamoto describes that such re-heating may only be avoided if the calender rolls that are employed are heated. This is in direct contravention with claim 1 as amended, which recites that, after pre-heating the fibrous web, the fibrous web is calendered between non-heated profiled calender rolls in a single calendering step without subsequent re-heating.

The Examiner contends in the Final Office Action that "[t]here is no reason to reheat a resultant filter medium in the ... process [of examples 13 and 14] of Yamamoto et al. ... because it would loosen the inter-fibers bonding in the finished filter medium." Final Office Action at p. 3. This contention is not inconsistent with Applicant's above-stated position because Applicant has not contended that there is no subsequent re-heating in examples 13 and 14 of Yamamoto et al. Rather, Applicant has contended that examples 13 and 14 of Yamamoto et al. do not teach or suggest that, after pre-heating the fibrous web, the fibrous web is calendered between non-heated profiled calender rolls in a single calendering step without subsequent re-heating. With respect to the Examiner's contention that "it would have been obvious in the art to preheat a fibers web to activate undrawn (i.e. binder) fibers in a fiber web and then to configure the web using a pair of unheated/cold profiled calender rolls for reason of record," Final Office Action at p. 4, Applicant respectfully maintains that the Examiner provides no support for this contention and that claim 1 as amended herein is allowable for the reasons set forth above.

In addition, Narou also describes that "the filtration membranes can be easily stuck to the filtration unit by .. a method using an adhesive agent cross-linked by heat, a heat-seal method or the like." Column 9, lines 16 to 21, emphasis added. The additional cited references are not relied upon to disclose, nor do they disclose, a method for manufacturing a pleated filter material that includes the step of calendering the single fibrous web between non-heated profiled calender rolls in a single calendering step without subsequent re-heating, as recited in claim 1.

To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Since the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden does not teach, or even suggest, all of the limitations of claim 1 as more fully set forth above, it is respectfully submitted that the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden does not render obvious claim 1.

It is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Office Action's generalized assertions that it would have been obvious to modify or combine the references do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .

. . . .

> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the present Final Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Accordingly, the Office must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not the case here -- there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed," stating that:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a

> technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings.

Therefore, reversal of the 35 U.S.C. § 103(a) rejection, and allowance of claim 1, is respectfully requested.

9. CONCLUSION

In view of the foregoing, it is respectfully submitted that the combination of Yamamoto, Narou, Norton, Thornton et al., Frank, DE '053 and Gosden does not render obvious claim 1.

Reversal of the final rejection of claim 1 is therefore respectfully requested.

Respectfully submitted,

KENYON & KENYON

Dated: September 24, 2004 By: _____

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APPENDIX A

1. A method for manufacturing a pleated filter material from a thermally bonded non-woven fabric, comprising :

forming a single fibrous web from undrawn and drawn synthetic fibers;

pre-heating the fibrous web;

calendering the single fibrous web between non-heated profiled calender rolls in a single calendering step without subsequent re-heating, wherein during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between the non-heated profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding, and wherein during the single calendering step, spacers are formed in the non-woven fabric to thereby form the filter material.